Reflecting on Practice ...

WHERE THE WILD THINGS ARE

Reflecting on Practice: Making Connections that Support Learning

Unit 2, Session 3

2016

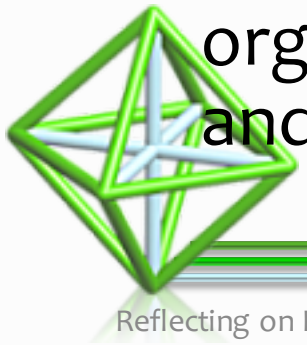
Let's do our experiment!

- Everybody out in the hall!
- You'll be invited in to do the test.

How People Learn

2.Teachers must teach some subject matter in depth, providing many examples in which the same concept is at work and providing a firm foundation of factual knowledge.

To develop competence in an area of inquiry, students must: (a) have a deep foundation of factual knowledge, (b) understand facts and ideas in the context of a conceptual framework, and (c) organize knowledge in ways that facilitate retrieval and application.



NRC, 2001

So, let's say…

- 16 out 24 of got the answer correct…

- Toss a coin 100 times. How many heads would you expect to get?

- 50? 40? 20?....

- Toss a coin 100 times. How many heads would you expect to get?

- 50? 40? 20?....

- In order to reason about our results need to find out how variability just due to chance behaves

Let's create a table!

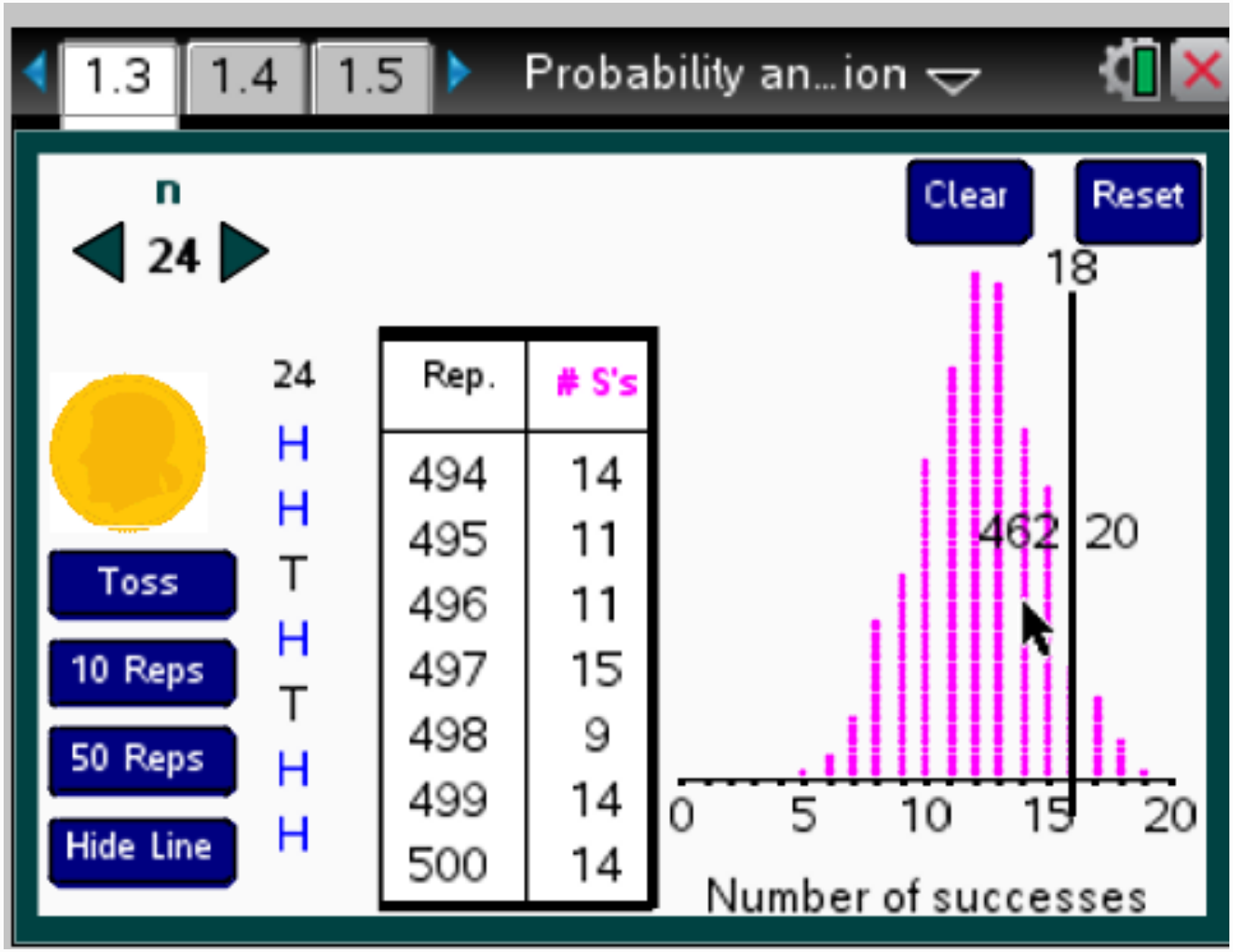
- Use your post-it note to place on the whiteboard.

Turn to the Worksheet…

How does our hypothetical *'16 out of 24'* result fit into the distribution of the number of successes (heads) that happened by chance?

Does it seem like our results could have happened by chance?

How comfortable are you in answering this question at this point?


1.3
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496 11
497 15
498 9
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500 14
462 20
0 5 10 15 20
Number of successes

So if 16 out of 24 people were able to correctly identify, would you believe it wasn't simply by chance?

Turn back to the Worksheet…

On to Important Stuff (Part 2)

How does this work fit into our thinking about connections?

- First

Related to a common structure: Think about the answer to our first statistical question:

  - Is there evidence to support the fact that people in our sample could tell the difference between the colas.
  - What are the key elements in the situation?

Thinking about connections

- Second connection? Think back to week one!

Can you think about what came before this exercise (in Grade 6 or earlier)?

Can you think about what will come after (in Grade 8 & HS)?

Did gender matter?

- Can we analyze this question in the same way? Why or why not?

- This is a different question…

Results from our data…

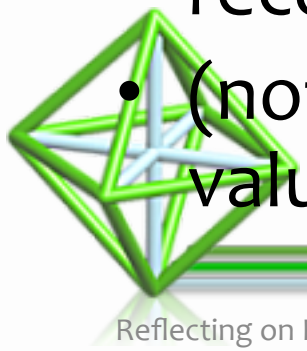
Did gender matter?

- Can we analyze this question in the same way? Why or why not?

- Can we decide based on the counts in our table whether gender matters? Why or why not?

Simulation

- Let red cards stand for the females and black cards for the males
- Count out the exact number of each for your taste test.
- Shuffle them and deal out cards representing the number of people who could identify the two colas. Count the number of females and record the number on the chart.
- (note that this one count would fill in all of the values in the table.)



Does gender matter?

- If you were reading a task, what might give you a clue that this problem was not like the first one we did?

- What information did you need in order to set this simulation up- in other words what was the basic structure?

- *Statistical inference builds on the concepts developed in middle grades with respect to analyzing data.*
- *The basic underlying premise of inference is to compare your observed result to chance behavior. How does the truth behave due to normal variability and does your observation fit into this distribution or is it something that does not typically happen by chance.*
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- *And in the process, we investigated making connections to the structure of the problem as defining a category of problems. We also looked at the consistent structure in the sampling distribution for a given sample size and percentage of successes.*

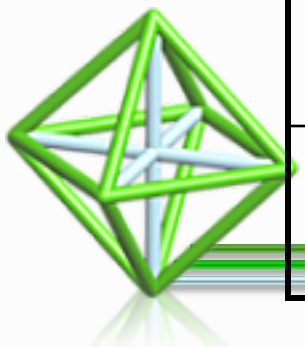
Does gender matter in identifying coke vs pepsi?

Suppose two thirds of the women were successful and
one half of the men.

Does gender matter in identifying coke vs pepsi?

Clearly a Difference

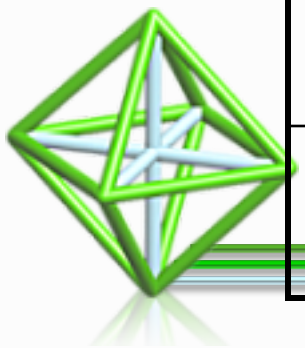
	Yes	No	
Men	2	18	20
Women	24	0	24
	26	18	44



Does gender matter in identifying coke vs pepsi?

The data:

	Yes	No	
Men	10	10	20
Women	16	8	24
	26	18	44



Simulate the situation

Cards: 24 red cards for women

20 black cards for men

Deal out 18 cards and count the number of women (red cards)

Probability that 8 of the 18 were women

No. of women in 18 cards:

5	
6	
7	xxx
8	xxxxx
9	xx

(In 2 sets of 18 cards, there were 9 women.)